

PATENT COOPERATION TREATY

8/12

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2005/001005

International filing date (day/month/year)
15.03.2005

Priority date (day/month/year)
18.03.2004

International Patent Classification (IPC) or both national classification and IPC
H04N5/335, H01L27/148

Applicant
E2V TECHNOLOGIES (UK) LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Fragua, M

Telephone No. +49 89 2399-5875



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-4,6, 8-13
	No: Claims	1,5,7
Inventive step (IS)	Yes: Claims	6,13
	No: Claims	1-4,5,7-12
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

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Re Item V.

- 1 Reference is made to the following documents:

D1 : EP 0 872 897 A (EEV LIMITED) 21 October 1998 (1998-10-21)

D2 : US 5 134 087 A (HYNECEK ET AL) 28 July 1992 (1992-07-28)

2 INDEPENDENT CLAIM 1

- 2.1 Using the wording of present claim 1, document D1 discloses (the references in parenthesis applying to document D1):

A charge coupled device having a charge transfer channel (column 1, line 57 to column 2, line 10), the channel comprising a plurality of path-defining structures (Fig 3; column 4, lines 1-30) defining a principal path (7) for the movement of charge through the channel, and a plurality of secondary paths (8, 9) converging on the principal path, such that in use signal charge generated across the entire width of the channel is fed into the principal path from the secondary paths (column 4, lines 3-7; column 7, lines 3-7).

In view of the above, the present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

3 INDEPENDENT CLAIM 2

- 3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claim 2 does not involve an inventive step in the sense of Article 33(3)PCT.

- 3.1.1 Document D1, which is considered to represent the most relevant state of the art to the subject matter of claim 2, discloses (the references in parentheses applying to this document):

A CCD imager of the type having an image area in which charge is generated and clocked to an output (column 2, line 58 to column 3, line 21), comprising an image area divided into a plurality of channels by channel edges (column 3, lines 47-52), at least some of the channels being further divided by path defining structures (Fig. 3) to create at least a principal path (7) and one or more secondary paths (8,9); ~~the principal and one or more secondary paths being arranged such that charge overflowing from the principal path is retained within the one or more secondary paths before the channel edges.~~

- 3.1.2 The subject-matter of claim 2 differs from document D1 in the fact that charge overflowing from the principal path is retained within the one or more secondary paths before the channel edges.

However, this distinguishing feature is described in document D2 (D2: column 2, lines 37-51) as providing the same advantages as in the present application.

- 3.1.3 Therefore the features disclosed in D1 and D2 would be combined by the skilled person, without exercise of any inventive skills in order to solve the problem posed. The proposed solution in independent claim 2 thus cannot be considered inventive (Article 33(3) PCT).

4 INDEPENDENT CLAIM 12

- 4.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claim 2 does not involve an inventive step in the sense of Article 33(3)PCT.

- 4.1.1 Document D1, which is considered to represent the most relevant state of the art to the subject matter of claim 12, discloses (the references in parentheses applying to this document):

A CCD comprising a channel for transferring charge (column 2, line 58 to column 3, line 21), the channel comprising a plurality of path defining structures (Fig. 3) to create at least a principal path (7) through the channel and one or more secondary paths (8, 9) across the channel width; the principal and one or more secondary paths being arranged such that ~~charge spilling from the principal path fills the adjacent secondary paths~~ in turn such that the minimum width of the channel is used to transfer the charge (column 4, lines 3-7).

- 4.1.2 The subject-matter of claim 12 differs from document D1 in the fact that charge spilling from the principal path fills the adjacent secondary paths.

However, this distinguishing feature is described in document D2 (D2: column 9, lines 23-31) as providing the same advantages as in the present application.

- 4.1.3 Therefore the features disclosed in D1 and D2 would be combined by the skilled person, without exercise of any inventive skills in order to solve the problem posed. The proposed solution in independent claim 12 thus cannot be considered inventive (Article 33(3) PCT).

5 DEPENDENT CLAIMS 3-5, 7-11

Dependent claims 3, 5, 7-11 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

6 DEPENDENT CLAIMS 6, 13

The features of dependent claims 6, 13 are neither known from, nor rendered obvious by, the available prior art. The reasons are as follows:

- 6.1 The feature of being divided the width of the charge transfer channel into the principal path and two or more secondary paths, is neither disclosed nor rendered obvious by the available prior art.

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- 6.2 The features of being the charge transfer channel formed in a serial register, is neither disclosed nor rendered obvious by the available prior art.